

USER NOTES FOR DEMO-PAK 1

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AN INTRODUCTION

DEMO-PAK 1 is a collection of 15 separate BASIC graphics programs that have been rewritten for use with the 2068/1520 combination. It is hoped that, besides the immediate enjoyment derived just by watching the 1520 plot a graphic figure, a user will learn by examining demo listings just how to use the 1520's printing and plotting commands in his or her own programs.

THE DEMONSTRATION PROGRAMS

DEMO-PAK 1 loads in two parts and then auto-runs. The 1520 MUST remain OFF until the program initializes the I/F logic. Follow the screen prompts as to when the 1520 can be turned ON. A menu listing the 15 demo programs will appear and you will be asked to enter the number of the program you want to run. Entering the number "16" will return you to BASIC where you can examine program listings. This is the only way to exit the error-trapped DEMO-PAK 1 program. Pressing BREAK at any point (even while the 1520 is busy plotting) will take you to the menu. Should the plotter be busy when a BREAK is made, the plotting will cease and the pen will move to the left side of the paper. After such a BREAK, it is often necessary to use the 1520's paper feed button to advance the paper past the plotting that was interrupted so that the next plotted figure has a "clean slate".

Demo. #1 - FRACTAL PLOT (prog. lines 500-965)

FRACTAL PLOT is a rewrite of the program "3D Fractals" by Ted Knyszek which appeared in issue #17 of T-S Horizons Mag. It has always been one of my favorite graphics programs for the 2068 and was one of the first I converted to use with the 1520. After selecting FRACTAL PLOT from the menu, you will be prompted for a "level number". The level number determines the number and size of the triangles that will make up the fractal. Level 1 calculates 4 triangles, level 2 calculates 16 triangles and so on up to level 6 which calculates 4096 triangles. Each increase in level quadruples the number of triangles and the time it takes to calculate the arrays. I most often select level 4 or 5. Levels 1-3, while quickly computed, result in uninteresting low resolution fractals and, although level 6 produces the most detailed fractals, it requires LOTS of time to calculate and plot. After specifying a level number, you are prompted for the color of pen you want to be used for plotting the fractal. Next, you will have to wait for calculations to be made before the plotting starts. Each fractal you have plotted will be different than any other and some will be more interesting than others.

Demo. #2 - TURTLE PLOT (prog. lines 1000-1258)

TURTLE PLOT is an adaptation of the TIMEX program "Turtle Graphics" which, along with two other programs, came with the purchase of most new TS-2068's. "Turtle Graphics" unfortunately had more than it's share of serious bugs that have been corrected in TURTLE PLOT. Some old turtle commands have been eliminated and two new ones have been added. Also with TURTLE PLOT, the screen area for turtle movement is bounded from 8-247 in the x-direction and from 0-175 in the y-direction and, unlike "Turtle Graphics", screen wrap-around of drawn lines is not possible. Upon selecting TURTLE PLOT from the menu, you will be given a screen with a single dot (the "turtle") in it's center and you will see the computer is awaiting an input. The plotter will have moved it's pen to the center of the paper and from now on will plot a line on the paper corresponding to every line that is drawn on the screen. When the program starts, you are in what I call "drawing mode" with the following commands at your disposal: (NOTE.... xx = a positive integer number.)

< DRAWING MODE COMMANDS >

fdxx = draw line (pen down) forward xx units.
mvxx = move (pen up) forward xx units.
inxx = increment line length by xx units.
lfxx = turn left xx degrees.
rtxx = turn right xx degrees.
drxx = turn to xx degrees. (0 degrees is up; 90 degrees is rt.).
nxxx = specify new x coordinate (nx range = 8 to 247).
nyxx = specify new y coordinate (ny range = 0 to 175).
or = define new origin according to nx,ny & move turtle there.

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< DRAWING MODE COMMANDS > (cont.)

pixx = set pen color (xx = 0/black, 1/blue, 2/red, 4/green).
 ri = rotate pen color.
 ns = do not save commands until "sv" command is issued.
 sv = resume saving commands.
 pg = print saved command list on the 1520.
 cl = clear screen and move turtle to origin.
 er = erase current command list.
 ed = go to "edit mode".
 en = quit TURTLE PLOT and return to main menu.

As the turtle is moved around, each command issued is saved or not saved as specified by the last use of the sv or ns command. Thus a list of commands describing the motion of the turtle can be built, saved, and edited. The "edit mode" is entered from the "drawing mode" by entering "ed" to the prompt. In the edit mode, you are presented with a list of commands and a ">" pointer to the left of the top command. Pressing the <ENTER> key will move the pointer down the list from command to command and, after passing the bottom of the page, it will return to the top of the list. You can have a maximum of 61 saved commands that occupy three "pages" of screen displays. To access the next screen page, type "p" and <ENTER>. After the third page is displayed, typing "p" and <ENTER> will take you back to the first page. To make a change to a command, position the pointer next to it and type "c" and <ENTER>. Then enter the new command - it will over write the old command at the pointer's location. Commands may be added to the end of the list by moving the pointer past the last command and typing "a" and <ENTER>. The additional command is then entered and is tacked onto the end of the list. To exit the edit mode and return to drawing mode, type "en" and <ENTER>. The edit mode commands are:

< EDIT MODE COMMANDS >

ENTER = move ">" pointer down one command.
 c = change command at pointer.
 a = add a command to the end of the list.
 p = display next screen "page" of commands.
 t = move pointer to top of command list.
 en = return to drawing mode.

Try these two examples of turtle plotting :

Examp. 1

```

*
fd2
in3
rt123
cl
do50

```

Examp. 2

```

*
fd4      rt144      in4      ri      do8
in4      fd4      rt144      ns
rt144    in4      fd4      dr90
fd4      rt144    in4      sv
in4      fd4      rt144    cl

```

Demo. #3 - SIERPINSKI CURVE (prog. lines 1500-1785)

This program was downloaded from the TIMEX SIG of the King's Market BBS in Denver and is a excellent example of a screen display graphic program that has been rewritten to work with the 1520 plotter and utilize all four pen colors. It is one of the most appealing demonstrations of graphic plotting with the 1520 I've yet encountered. Try it..... you'll like it!!

Demos. #4-#15 - COMMODORE 1520 USER'S MANUAL EXAMPLES

The last group of 12 demo plots are taken from the 1520 User's Manual and were rewritten to work with the 2068. If you compare an original Commodore example with one rewritten for the 2068, you may be suprised to see that programming the 1520 for the 2068 is actually easier than programming the 1520 for the Commodore!! The following is a listing of the twelve rewritten Commodore examples, where each can be found in the 1520 User's Manual, and the line numbers each occupies in DEMO-PAK 1 :

EXAMPLE	1520 MANUAL PG. NOS.	DEMO-PAK LINE NOS.
4) CONCENTRIC CIRCLES	46	2000 - 2220
5) CONCENTRIC SQUARES	47	2500 - 2730
6) ROTATING TRIANGLE	48	3000 - 3220
7) CONE MADE FROM CIRCLES	49	3500 - 3690
8) CIRCLE MADE FROM CIRCLES	50	4000 - 4200
9) ROTATING ELLIPSE	51	4500 - 4710
10) ARCHIMEDIAN SPIRAL	52	5000 - 5170
11) GEOMETRIC DESIGN	53	5500 - 5720
12) CHECKER BOARD	54-55	6000 - 6280
13) HATCHING	56	6500 - 6820
14) CHANGING FORMS	57-58	7000 - 7340
15) ROTATING FIGURES	59	7500 - 7730